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FEB. 5, 1951

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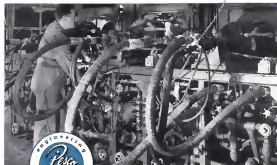
But that's exactly the kind of "flight" Pesco fuel pumps take on our endurance test bench "plane". Every conceivable operating condition is simulated on the 900-hour, continuous test run at speeds equivalent to 600 miles per hour or better.

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NEWS DIGEST

DOMESTIC

Shipments of 234 two-to-two plane personnel and executive planes by ten companies during December showed increases over preceding month's 228 by 11 manufacturers. There were 300 four-engine and over planes shipped during December and 94 two-planes, with a total value of \$2,110,000 listed at the manufacturers' net billing price. November's rate was \$1,425,000. The total for 1950 came to 3,586 planes worth \$19,157,093, compared to 3,562 worth \$14,324,800 sold in 1949. Shipments last year consisted of 1855 one- and two-planes and 7311 four-to-five plane.

Capt. Don S. Gessle, leading USAF air in Europe during World War II, was killed when the Lockheed T-35 jet trainer he was piloting crashed near Andrews AFB, Md. An engine over-dying with loss on the engine performance flight also was killed. Gessle was credited with knocking down 19 planes and destroying enemies on the ground. He was attached to USAF headquarters in Washington in 1949 and then assigned to duty at the University of Maryland.

San Carlos B-36 which crashed? England made a nonstop return flight to Cornell AFB, Tex., in 30 hr. 16 min. The flight should have included a stop at Lincoln, Mo.

Eightyplanes exported in 1950 were valued at \$2,332,793, an increase over the previous year's \$2,000,361—probably due to rise in manufacturing and export costs since the market collapsed last year (1949) had dropped from 19,499,455. Over half (2922 planes) went to Latin America, with Brazil, the big user, taking 168 valued at \$678,732. Not included in the totals are sales to Alaska and Puerto Rico at 29 planes worth \$113,935.

Kaiser-Frazer Corp. has announced the appointment of Ralph H. Ibsen, former chief design engineer of the automotive division, as chief engineer in charge of aircraft. Ibsen, born in Milwaukee, was vice president and general manager of Ford's Buick division at Willow Grove, Pa. prior to joining the Kaiser-Frazer Corp. four years ago. He also has been associated with A. O. Smith Co., Willy-Dover, and Buick and Oldsmobile.

Twelve British business experts are studying Kelly AFD maintenance and

logically methods as part of a six-month tour of U. S. plants under ECA sponsorship. The group will investigate systems used here to train highly skilled industrial workers.

CAA announces that the Fourth Annual Fourth Region Non-Scheduled Operators Conference, scheduled for May, 27, 1951, has been canceled for "various and ready reasons."

FINANCIAL

Doan Aircraft has declared an extra dividend of \$1.25 per share in addition to the regular quarterly payment of \$1.25 per share payable Feb. 28 to stockholders of record Feb. 7.

Lancaster Airplane Corp. stockholders will receive 1000 shares of 5.5 percent cumulative voting bond preferred stock with a par value of \$100 per share. The preferred would be used to secure a note held by Texas Engineering & Mfg. Co., thus releasing a mortgage held by Lancaster on CAA's corporate property. A new mortgage note is being arranged with a Dallas real estate banker to supply Lancaster with additional working capital.

Waco Aircraft Co., during the fiscal year ended Sept. 30, 1950, had sales of \$108,888, with net profit of \$13,445 after provision for depreciation. Part of the sales net represents government transactions subject to restrictions on sales.

Aeromac Corp. has declared a 10% to quarterly dividend of 1 cent on the firm's common stock payable Feb. 15 to stockholders of record Feb. 1.

INTERNATIONAL

Canadian government defense contracts for the last half of December, 1950, show orders by the government's Canadian Commercial Corp. for aircraft equipment totaling \$431,126,000. Biggest orders were to the Hamilton Aircraft Co. of Canada for overhead and spare, \$1,511,880; to Irving Air Chute, Ltd., for chutes, \$951,180; and to A. V. Roe Canada for maintenance, \$900,799.

Brazil and India are negotiating a bilateral agreement involving Air India International, which is 49 percent Indian government-owned.

GCA equipment will be installed at Georgetown Airport, Sao Paulo, Brazil. Remko Aviation Corp. will maintain the equipment, which is scheduled to be in place by the end of this year.

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WHATEVER YOU FLY



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THE ARC TYPE 11A

Meets your basic navigation and communication needs. Provides for VHF transmission, LF range reception and accurate loop navigation.

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Adds two-way VHF communication. System includes mobile VHF receiver and a five-channel crystal controlled VHF transmitter. As many as four of these transmitters may be installed providing up to 20 channels.

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Given you the essential advantages of the Type 11A and the Type 17 system, we get two-way VHF communication and LF range reception, as well as accurate loop navigation.

Ask about ARC Type 11B Constant range system and ARC-16 channel Type 17A Inclusion Amplifier. Write for all the details.

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SIDELIGHTS

Military

Now vacant post of chief, Air Force division of National Guard Bureau won't be filled very soon. Official reason: "Refill of the Air Guard has been ordered into defense areas." Actually, there's a behind-the-scenes fight by the Bureau to keep the Air National Guard under its direct control. Largest single piece of evidence comes from the Pacific. In MATS was an H-39 which was being flown by a Boeing C-119 and landed in Hawaii, Japan, while 12 hours also control of order. Now defendant policy for civilian components of the armed forces will be issued this month and will take into consideration the military's civilian acceptance in determining their classification.

Industry

Kaiser-Frazer Corp. is moving its Wash agency efforts to the new Capital City—right next door to the Washington office of Franklin D. Roosevelt & Associates Corp. in the same building. Kaiser-Frazer's licensing of other manufacturers to build its engines is a complete switch from World War II practice when the corporation refused to license. Strong support of the new G.W. policy is President Vice President J. F. McCulloch, who during the war was Senate chairman of United Aircraft Corp. looking forward to the licensing system. Manufacturing personnel dealing with materials shortages are finding unusual cooperation between conservation orders now being issued and those of World War II. Detailed data on use of new agencies their own policies.

From Round-About

An aviation executive's claim for Wash registration, government and industry's support is judged well, open season in the state for Dr. Paul H. Heston, PAA's Chief of engineering. American Aircraft Flight School will soon have a new home at Washington National Airport, old one was closed along the way to make room for others. Patrick Air magazine Association reports the first woman copilot pilot, a Miss Andie, a physician and health service official in Idaho-Columbia.

Those 'Saucers'

Aero Club of New England asks USAF to scrap its inquiry into "Flying saucers" and other mystery craft. Meanwhile, the AF from Kansas City described Mid-Century and Pilot Larry Vanhook's case of a strange plane about 14 times the size of a B-29, with long, slender fuselage, long straight wings and further forward than a B-29. These were no engine mountings on wings, no exhaust pipe, no pilot visible. Captain James F. Reinhardt and one of this 11 passengers also saw it, near Sioux City, Ia., evening of Jan. 25. (Columbia and previous reports see on p. 20).

CYLINDER TEMPERATURES RELAYED CORRECTLY!



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TRACTABLE TRIANGLE—Flight tests of the Aero 7878 research plane have included over 100 landings and takeoffs, the high rate of roll tests. In the speed range tested, no adverse characteristics were reported. Pilot E. J. Felt says it is "easy and pleasant to fly."



HILLER STOWAWAY—Aero Field Force's Hiller YB75 copter is placed aboard a big Douglas C-124, Globemaster II, during tests at Ft. Rags. Rotors could be lowered for air shipping. On deck are a number of H-39s having cyclic control stick mounted on floor.



Aviation News Picture Highlights



VARIABLE-FLITCH ANCESTOR—The history variable pitch prop developed and built by Dr. William F. Doolittle in 1915 in cooperation with the late Paul Stewart. Dr. Doolittle at Stanford University has been donated by Dr. Doolittle to the Air Museum at the Smithsonian Institution. The 61-year-old man at American aero engineers is now looking over his propeller headwork prior to donating it to the Washington museum.

50% Increase in Production to Meet Demands for Brad Foote Gears



1951 may be rugged for all industrialists—including users of BRAD FOOTE GEARS—until the BRAD FOOTE GEAR WORKS. Already we're receiving from our friends heavy and urgent demands for early delivery.

Whether the coming months bring us immediate war—preparation for future war—or, as we hope, the assurance of long years of uninterrupted peace, the BRAD FOOTE GEAR WORKS will be ready to meet any contingency.

We have made material additions to our plant equipment—consisting of important, modern, improved, high-speed mechanisms.

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With these developments, we have obtained approximately 50% greater output without one minute of the long, tedious delays which are virtually unavoidable when new plants are constructed and equipped.

Brad Foote Gear Works is set to go.

We thank our old friends. We welcome new ones. We are far better prepared than ever before with thoroughgoing engineering cooperation—with the finest gears we have ever built—with prompt delivery.

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WHO'S WHERE

In the Front Office

Donald W. Douglas, Jr., has been promoted to new assistant manager in the Douglas Aircraft Co., while retaining his position as training operations director. Henry Woodford has been named vice president in charge of the new's mechanical Tulsa division. Douglas J. Jr. has held a variety of technical and administrative positions since he joined the concern in 1939. Woodford, former head of General, joined Douglas in 1948. He became general manager of the Tulsa division where it was usually set up.

Don Woodford has been appointed vice president in charge of engineering for Douglas Aircraft. He will direct the technical side of the company's Fairchild C-119C production for the USAF as well as aircraft development at Willow Run. Woodford is particularly known for his development of the Fairchild Y-104C twin-engine propeller plane in the mid-40s. He joined K&F in 1944 and became chief engineer in early 1947.

Changes

Russ Adams, Hugh H. Goodrich has been named to succeed Russ Adams, John F. Whitney as Vice President of MATS. Whitney is being assigned to act duty.

Joseph V. Meade has been named general manager at Calspan-Wright's newly formed Electronics Division which will coordinate all the company's work in this field, including aircraft, engine and propeller controls, guided missiles, electronic equipment and related equipment as well as electronic systems. Harry E. Lohr, of the Douglas division, has been named vice president of the new set-up, and Ward D. Davis has been made sales and field service manager.

Paul J. Burt has been named Director representative for Northrop Aircraft. Joseph A. Dwyer has joined the Engineering and Production Division of Williams Brothers Laboratories as administrative manager.

Howard E. Sager has been appointed representative of Douglas Radio Plant 7 at Baltimore and Willow T. Spier has been named chief engineer of maintenance and shop at the Radio division. Harry G. King has joined William H. Hixson Ltd., N. Hallowell, Calif., as chief design engineer. Theodore A. Smith has been appointed assistant general manager of RCA Engineering Products department.

Honors and Elections

John Gerns and James Key have been elected to the board of directors of A. V. Roe & Co. Ltd. Gerns joined the firm in 1931 and became controller general (prop. manager) in 1946. Key has been named chairman of the engineering division of Aero Macdonald since 1947.

INDUSTRY OBSERVER

Watch the new Westinghouse J-40 jet engine in one of the most important powerplants in forthcoming government programs. The first U.S. engine to be announced in the approximately \$3,000,000, thrust class (with afterburner) fits into several Navy programs. Douglas plans it for two new planes—an anti-submarine night fighter intercepter, the F9B, successor to the F7B, and for an A-10 attack plane, next in line after the turboprop A-1A. The J-40 also will probably replace the earlier Westinghouse J-34 engine in a later redesigning version of the McDonnell F2H Phantom to be known as the F3H.

Fairchild Aircraft's C-119C cargo and assault transport is slated to become the C-47 of the new century (Douglas built more than 9000 of the C-47s in World War II). With the Wright coupled R-3350 engine slated as the powerplant for the C-119C, this probably explains why the Navy has designated Hudson Motor Car Co. as its alternate source for the R-3350s.

U.S. Army liaison plane experts have about decided they would like to standardize on the Cessna L-19 and the de Havilland Beaver for liaison craft. After those planes, they will probably follow the Menominee Corp. trend toward replacement of four-engine liaison planes with small helicopters.

The jet-powered Hughes Aircraft XH-40 helicopter, recently rolled out again to resume ground tests at Calver City, will probably undergo about three months of such tests and other related tests, before it makes its first flight. The big aircraft is now fully repaired from the extensive damage suffered when it crashed up last June in darker test-flight.

Navy's additional orders for Chance Vought F4U-5 Corsair fighter bombers are a tip-off that the winging war area is not putting all its eggs in one basket with the jet fighters just yet. It is keeping some piston-engine aircraft on order for specialized missions such as the down-rocket work in which the Corsair has distinguished itself in Korea. The F4U-5 is the sole piston-engine fighter now in production, although several other World War II fighters are still in use, and are being utilized by additional quantities withdrawn from storage.

Key Westinghouse materials man for aircraft companies to leave in the National Production Authority is Nigel H. Bell, newly appointed director of NPA's Light Metals division, charged with NPA aluminum and magnesium supply and distribution programs. Bell occupied a similar post in the War Production Board in World War II, later was special assistant to Administrator at War Assets Administration, most recently has been vice president of Stirling-Walton, Inc., New York.

Aero Canada's new jet engine factory for production of the Orenda turboprop engine is expected to be in operation by the end of 1951 at Malton. Orenda will be used as powerplant for Avro CF-100 night fighters and for the Canadian-built North American F-86s which Canadian Ltd. is constructing. Aero officials estimate that the present employee base of 3000 will be doubled within 18 months.

British sources say that the extra island land given to the Corsair 3-EDs by the additional four jet engines in pods at the wing tips, plus reverse pitch propellers on these six pistons permit for short landings, and that four-wheel drive landing gear, give the superlateral side edge to short-field performance. Boeing 3-29s now in action in Britain, despite the much larger size of the Corsairs.

Stop checks made by the McDonnell Douglas F3H after being outlanded from a carrier in part of simulated intercept maneuvers. The plane is so slow that pilots have to check its speed after takeoff, as well as to avoid exceeding a speed of 150 knots, the maximum at which wheels can be retracted. By the quick palps, pilots can slow the speed until they get their wheels up.

Department of Defense, for aircraft and missiles, etc., are aimed to establish three program levels for requirements on the basis of appropriations for 1951 and projected appropriations requests for 1952, with adjustments if any should be necessary.

Non-priorities element grants—such as CAA and CAB—for civil aircraft, are asked to determine their program levels on the basis of 1950 levels, but to take into account that some deterioration of civilian aircraft standards must be expected, to support the air-around defense program. (CAA and CAB processing of civil aircraft and equipment is such a small part of the total that for practical purposes in this field, these agencies can be considered as non-priorities.)

► **Significant Outcomes:** An interesting and perhaps significant outcome of recent sessions is based on the fact, at selected major times, for which NPA has stated that quarterly schedules be submitted.

A check of the list shows that it covers electronic requirements in detail as the first item on the list. But there is no provision for aircraft or missile parts in the transportation section, which is confined to such items as passenger cars, trucks, motor coaches, locomotives and parts, railroad and street cars, traction trolleys, and motorcycles. And the only other items, except for electronics, to be found in the related list with direct aircraft application are terminals, land (for aviation gasoline) and aircraft fuel.

One unofficial interpretation of the contents is that air carrier requirements, which have been listed recently by the Department of Defense, are considered lumped with defense requirements. It is in the way the planning goes, it doesn't look good for the chances of other civil airlines, such as Appalachian planes and scheduled business planes and training aircraft under the new program. There is no place for their evident in the new lists for program requirements issued by NPA. And, unless the air carrier requirements are treated lumped with other defense aircraft requirements, there is no place for them in the lists, either.

For Materials Council Planner Stuart the new program is an old story. He looked up the World War II Catalog, Materials Plan beginning in 1942. And there was in the new lists to list materials requirements closely resemble materials requirement forms of the World War II era.

Washington reports say that Stuart will probably have with him representatives over to Defense Production Administration, where that agency takes more definite form before JPL, and will run the new materials plan. If it is not in force, for DPA.



AEROPRODUCTS DIVISION of General Motors is doubling in Van Nuys, Cal., plant to accommodate new propeller business from the Air Force and Navy. Work of new business is for the four-bladed prop for the F4U.

C-119C Radial plant will have more than 500,000 sq ft and be completely air-conditioned. At peak production employment is expected to be 4000. Aeroprod's division's labor force is now around 1600.

Our Expanding Industry . . .

Chance Vought Aircraft division of United Aircraft Corp. has new Navy orders for a "substantial" quantity of additional P4U Corsair fighters, probably the P4U-5 and 5N model fighter.

Lockheed Aircraft Corp. has an overall increased order for its F-94 jet fighter, which will sharply increase output and production to about 1450 units.

Bell Aircraft Corp. is expanding its line on the government-owned aircraft of the Eastern General Wright-Kennedy Ave plant in Buffalo to get more space for both office and manufacturing.

Spartan Gyroscopic Co. has received an order from Republic Helicopter Corp. for 4000 gyroscopes for installation in the HUP-1. Order is believed to total nearly \$2 million.

Pacific Electric, Division Aviatron Corp. is expanding its engine building near its North Hollywood main office to handle increased work from the Navy.

Piedmont Motor Co. will build General Electric J-47 jet engines at

its Detroit factory, AF has announced.

Johnson Motor Car Co. will produce Wright J-550 engines in "The Detroit area" under a Navy contract. But most of the engines may be used to power the F4U C-119C of the Air Force.

Johnson Aircraft Engine Co. has built up a backlog of 51.5 million sq. engine assemblies from the Air Force and subcontractors from Buena Vista, Wash., GE, Pratt & Whitney, Curtiss-Wright, Republic and Sperry.

Pacific Aircraft Corp. has received an order from Republic Helicopter Corp. for 4000 gyroscopes for installation in the HUP-1. Order is believed to total nearly \$2 million.

Aviation Engineering Corp. is building a 50,000 sq. ft. plant near Sacramento, Calif., for production of jet engines and for other aircraft engine parts. Company expects to receive an order for jet engine parts for the F-100.

Piedmont Motor Co. will build General Electric J-47 jet engines at

its Detroit factory, AF has announced. The new plant will be used for the manufacture of jet engines and for other aircraft engine parts. Company expects to receive an order for jet engine parts for the F-100.

During World War II, P&W conducted training courses for more than 27,000 of its employees.



AEROPRODUCTS PROPELLERS, such as will be used on the new version of the Pocket, are being tested on a C-119B furnished by AF.

New C-119 Changes Engines and Props

Use of Wright engines and external fuel cells highlight latest Pocket.

Manufacturing version of the F4U C-119 to be built by Fairchild Aircraft at Hagerstown, Md., and Keesel-Fairchild at Wilkes Barre, Pa., will be the new C-119C radial-type transport.

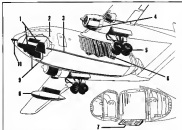
The major production version will be equipped with new propellers and propellers, compounded Wright R-3350 engines rated at 3250 hp, instead of the Pratt & Whitney R-4100 engines. It will use Aeroprod's four-bladed props instead of the Hamilton Standard propellers used in the earlier C-119B version now in service.

Airframe in the C-119C remains essentially the same in overall configuration, but includes numerous improvements such as added fuel in the tail section, redesigned fuel and oil systems, four-wheel "brake" landing gear, and external stowable wing tip tanks.

► **Early Production:** The new aircraft Pocket will go into production in December version is equally as possible, only in 1951. Planned production that for programmed in scheduled to reach a peak of 300 planes per month in next heavy USAF, Navy, and U. S. Military Defense Assistance Program requirements. This production will compare the total volume presently contemplated of both the Fairchild Hagerstown facility and the Keesel-Fairchild Wilkes Barre facility, it was learned.

Engine to be used in C-119C is a design called R3350-30WA and is rated at 3250 hp (dry) for 16000 ft. It weighs 1400 lb. dry. This compares with the Pratt & Whitney R-4100-30 engine now used in the C-119B, rated for take-off at 3250 hp (dry) at 3100 hp with water injection. Weight of the R-4100-30 is 3305 lb. dry.

Rate of climb with compounded R-3350 engines is 950 ft./min. Service ceiling with two engines will be 22,000



NEW FEATURES of the C-119C: 1, General fuel protection for crew; 2, emergency exit; 3, external fuel tank; 4, engine and oil cooler guard for protection; 5, track-type landing gear; 6, crash protection for cargo compartments; 7, wing tank; 8, droppable external fuel tanks; 9, crash protection for crew; 10, Right wing assembly.

ft. with two engines inoperative 3000 ft. Cruising speed is estimated at 135 knots. Normal speed is 650 mph. Initial takeoff gross weight of the C-119C with a 21,400 lb. payload is 69,500 lb. With no cargo and full fuel, weight is 44,800 lb. Maximum ferry speed is 2600 mph. Maximum fuel capacity is 2900 gal.

► **Airframe Modifications:** General configuration is unchanged, but the all-housed is altered somewhat with two new compound doors designed to improve functional utility. The fuselage part of the winging edge of the wing, and structurally, the fuselage is strengthened by the addition of the wing. The flap and aileron system are also redesigned for reduced loading and take-off distances, as well as increased lateral control.

These improvements are direct results of lessons learned during the recent air-

craft transport competition at Eglin AFB, Fla.

One of the unique design improvements incorporated in the C-119C is externally carried stowable fuel tanks. This means that for similar operations the plane will not use internal tanks. The external tanks are protected by a self-sealing bladder and incorporate internal jacking features.

Carrying the load in external, droppable tanks reduces weight loss in combat to a minimum. The tanks are mounted under each outer wing panel and are jettisonable by the pilot at, for example, a crash is inevitable in an assault operation.

In addition the C-119C also will be equipped with provisions for towing the results in cargo chute located under the new compartment for emergency egress where the cargo compartment is overloaded with cargo. A second ladder

P&W to Open School To Train Employees

Pratt & Whitney Aircraft will open a school May 1 in Hartford to train new employees in an effort to meet accelerated production schedules of the company. The school will accept about 16,000 sq. ft. of floor space and will accommodate

about approximately 800 employees at once. Trainers will attend school for a minimum of two weeks, so does a week, and will operate in work to which they will be assigned. The school will be operated almost entirely with the training of locally trained employees.

During World War II, P&W conducted training courses for more than 27,000 of its employees.

is built in the emergency escape chute.

- **Reasonable Access**—Other features include engine protection against small area fire for the crew, powerplant and vital accessories areas. Access can be easily severed when not required to permit greater payload.

Ballistics of landing aids are considered for greater strength. These balloons utilize the idea of the landing balloons against landing and ensure adequate protection for personnel or equipment through deflation or shutoff

up landings. Structural aids or "chase steps" have been added externally to the landing bottom to provide structural stability on snow, ice and mud in the event of wheels in landing.

Landing gear of the C-119C is greatly improved over that of the "B" version. Using the new four-wheel track-type gear, the C-119C will be able to operate from fields previously marginal for the C-119B. Specifically the new track-type gear permits operation in fields with a soft Modulus K factor as low

as 65. (K factor of natural soil ranges up to 100.) This allows about the lowest footprint of any military transport currently in production.

The new gear also has an auxiliary braking system utilizing compressed air bottles for emergency operation. Normal braking power is provided by landing flaps, a reduced landing speed, and reversible wheel propulsion. The C-119C will be able to land over a 30-ft obstacle with brakes plus assuming an 1170 ft



Navy Reveals Fast-Climbing XF4D

The U. S. Navy's latest and most radical intercepter, the Douglas XF4D, made its first flight at Edwards AFB, Calif., on Jan. 23, 1951.

The new craft, designed for complete takeoff and rapid climb, seems more like a missile than an airplane. And in fact, it may actually be the beginning of the transition from conventional piloted aircraft to pilotless ones.

It is logical to think so, because it really is really fly as the edge of human capabilities and endurance, and hence new's missiles aren't here yet. And so, an intercepter weapon, such as the XF4D might be, is also logical, because it combines the features of both.

► **Modified Delta**—Basic configuration

of the XF4D is a well-modified Delta wing. The leading edge of the Delta has been modified to allow room for a landing gear for the pilot, and the trailing edge has been fitted around the engine outlet.

Cockpit and forward part of the fuselage area, perfectly conventional, is driven the tricycle landing gear which is fitted.

Only photos available have been so fariously attached to eliminate actual outlines of control surfaces, but some characteristics are possible anyway.

► **Folding Wings**—It's a side fact, for instance, that the wings fold upward, resulting in a neat package only the height of the vertical fin. The fold joint

shows freely at the outward edge of the wing.

Probably, both full-span leading-edge flaps and semi-span trailing-edge flaps are fitted. Fuel is likely stored in the thick wing root fillet; there is a little obvious tank anywhere else.

Powerplant is a single jet engine, probably the Westinghouse J40, although it is not impossible that two small low engines are installed one above the other.

Cockpit design is patterned after that of the A2D Skyhawk. Forward of the cockpit there are a couple of thin pods which seem to indicate that the main armament is in the nose, across what appears to be through lifting hoods.

TOTAL Life Years Lost

per 100,000,000 passenger miles

through injury
through death



PASSENGER Life Years lost

per 100,000,000 passenger miles

through injury
through death



New Yardstick for Transportation Safety

Economic consultant proposes an improved method of reporting statistics to indicate loss of productive life.

By Rudolf Modley

On several recent occasions Aviation Week has been taking its readers along on some exploratory flights over the little-known land of safety statistics. On some such editorial flights readers were shown some left pages of railroad accidents which had previously been known to only a few professional engineers on the Interstate Commerce Commission.

But passengers must have been most surprised with the dense log that seems to hang permanently over the men. Upon their return from their flights they must have wondered how it was possible for the railroads to talk so much about a subject on which they know little or so limited. And they must have wondered if some way could not be found to let the people know how safe or unsafe our transportation system really is. Because it is only on the basis of facts—and all the facts—that we can draw our proper conclusions to the most urgent problems and hence to the better.

► **Yardstick Good**—The yardstick most commonly applied today is total man minutes lost due to the number of passenger deaths per 100 million passenger miles. If we say that the accident death rate for scheduled domestic airlines is 1 passenger death per 160 million passenger miles, we mean that you, if you were to take a trip today, would fly 160 million miles as a scheduled airline pilot your statistical chance to be killed once in 160 million.

If you were to take a plane that flew at a speed of 300 miles per hour you could keep flying constantly for 45 years and 3 months. With life expect-

ancy what it is today in this country you would probably die of old age as you plane long before the chance for accidental death would come up.

But the fact that this yardstick gives us an indication that it is quite safe to fly in a scheduled airline still does not make this yardstick a good one. How is a ship's worth with it?

► **Real Yardstick**—First, it measures passenger deaths only. This is a good measure of your own safety if YOU want to take a trip. But from the point of view of the nation you are not the only important person, other people, who are not passengers, are just as important. And the fact that YOU get their safety but that others get killed is getting more and more into account. And it helps to remember that YOU or your child may be one of the "others."

We thus come to the following conclusion: From the point of view of the passenger, the number of passenger deaths is important. From an overall viewpoint, ALL deaths are important. This includes the deaths of pedestrians, employees (except drivers and pilots), trespassers, and others killed by train, plane, car and boat.

We shall see that there are other objections against the presently used yardstick of passenger deaths per passenger mile. But even if these were no other ones, it is a high price that newspapers, magazines, television and administrators talked about the overall safety of places or things and statistics. The least they could do is tell about both overall AND passenger safety.

Second, the yardstick measures deaths only. It completely ignores injuries. This would not be too serious if all means of transportation had about the same number (and the same severity) of injuries for each accident. But this is not the case. 46,141 people were killed by train in the years 1940 to 1949. But 474,747, or more than 10 times so many, were injured.

This ratio is very different for scheduled domestic airlines in the same years 371 were killed but only 447 injured. Instead of a ratio of 16 injured for each death in railroad accidents (including auto-train collisions) we find a ratio of only about six injured for every two deaths in scheduled airline accidents. This shows how unfair it is to ignore injuries comparing only deaths.

► **Total Loss**—The commonly used yardstick of passenger deaths per 100 million passenger miles is therefore misleading because it is limited to passengers and to deaths. To be meaningful it would have to show the total loss to the entire nation due to deaths and injuries from transportation accidents. And now the question is: What can we do about it?

The answer is: Plenty. Fortunately, a lot of work has been done in other fields which show a way to a solution.

For quite some time leaders in the medical profession have been concerned about the shortcomings in our method of measuring death. Death as such is not available, postmortem deaths may be available. Measurement of nothing but the fact that a death has occurred is therefore less satisfactory than the measurement of how much life-time has been lost postmortally. An 80-year-old man dying from heart disease and a 12-year-old boy who dies

by a car on each coasted as one death under the presently used method. But the overall life expectancy of each of the two different modes at the time of their death.

► **Life Ranking**—To overcome this shortcoming, the American Medical Association undertook a study to compare death rates from various causes of death with the number of life-years lost through them. The results were startling.

Under the old system of counting deaths without regard to the age of the person dying, the death rate in 1945 from heart disease was four and a half times as high as the death rate from accidents. Yet, when the loss of personally lost life-years was calculated the ratio was reversed to 1 to 1. And when the number of work-years lost was counted, accidents moved into the first rank as the foremost killer in the nation.

The explanation lies in the average ages at death in 1945—age 68 for heart and age 46 for accidents. The corresponding figures for life expectancy were 11 and 26 years, respectively.

AMA concluded at the time the proposition of a possible study to figure out the cost in life-years and in work-years of disabling illnesses and injuries. Nothing has as yet been published by the AMA on this subject. Needed data in this field are available from other studies.

► **True Impact**—The effect of this revised measurement of death and disability can now be demonstrated. Not only do we begin to see the true impact of accidents on our national well-being, we also have, for the first time, a method by which we can measure death and potential injury with the same yardstick—namely, life-years lost through them.

By adding the loss of life-years through accidental death to the loss through accidental injury we obtain a complete measure of the impact of accidents—their physical, home, transport, or other. The following composite listed actually on assumed figures, well demonstrate the progress which appears in sight.

OLD METHOD

AMA figures are assumed and do not represent actual national experience.

| Per 100 million passenger miles | Automobile deaths | Automobile deaths, injuries and disability |
|----------------------------------|-------------------|--|
| Number of passenger deaths | 1.4 | 1.4 |
| Number of injuries | 4 | 4 |
| Number of fatal accidents | 1.4 | 1.4 |
| Number of all passenger injuries | 2 | 2 |

► **Report of Medical Association Research**—Automobile Deaths, Injuries and Disability, 1945

Injury in death and injuries can not be added together, so would one person can be made between the two methods of transportation. It adds total means of transportation are brought into the picture, the difficulty of making comparisons increases.

NEW METHOD

AMA figures are assumed and do not represent actual national experience.

| Per 100 million passenger miles | Automobile deaths | Automobile deaths, injuries and disability |
|--|-------------------|--|
| Life-years lost through passenger deaths | 10.1 | 10.1 |
| Life-years lost through passenger injuries | 1 | 1 |
| Total passenger life-years lost | 11.1 | 11.1 |
| Life-years lost through passenger deaths | 10.1 | 10.1 |
| Life-years lost through passenger injuries | 1 | 1 |
| Total passenger life-years lost | 11.1 | 11.1 |

Death and injuries can now be added together because they are measured in the same way. In this case, the loss of life-years is the same for both. All types of transportation accidents can be compared in this relatively simple way. Use of this new method would make it possible for all the people concerned with road and transport safety to communicate on the truly important issues to make travel safer.

Much work remains to be done before the new method can be applied correctly. The problems are too numerous and too complicated to be measured here. But this work must be left to the experts in such organizations as the National Safety Council, the Automotive Safety Foundation, and the Flight Safety Foundation.

AF Commits 99.6% Of Fiscal '51 Funds

Moving rapidly toward build-up to a \$5.5 billion structure, USAF has already committed 99.6 percent—approximately \$2.75 billion—of all available current procurement funds for fiscal 1951. AF Secretary T. K. Finletter has disclosed.

100 Finletter stated that almost \$2 billion of available current procurement funds for fiscal 1951. First and Second Supplemental, as well as regular appropriations, have been committed to definite specific procurement programs.

OK that amount, he said, 90.4 percent of total available procurement funds, thus far available, have been legally obligated through letters of intent and foreign instruments of contract.

In further deliveries of USAF funds authorized, Finletter disclosed that approximately 90.4 percent of all USAF

procurement funds (quantity as well as effect)—approximately \$9.25 billion—had been committed. Approximately 84.4 percent of this amount has been legally obligated, he said.

► **Nothing Fails**—In reference to questions concerning USAF's all-weather fighter capabilities, the Secretary declared: "We have now gotten the 'bang' out of the F-86 Scorpion, and the plane is now in accelerated production. The F-86 is better than carrying all-weather fighters such as the Lockheed F-94, and it will gradually replace an important current all-weather aircraft."

► **Casinos B-2**—If the English Electric Co. Cancun B-2 bomber is used by USAF, Finletter said, it will probably be used specifically as an all-weather intruder much as the secret weapon as the B-2 bomber in Korea today.

If Air Force buys the Cancun, Finletter said, it will build the aircraft. This does not mean, Finletter said, that the Martin XB-51 has been dropped. Air Force intends to carry out accelerated development of the XB-51. The prototype Cancun is being, however, for night intruder missions than the XB-51, he declared.

► **Testing XB-52**—Instructions are, Finletter said, that the Boeing XB-52 is a line plane and should be completely controlled and it is hoped to fly one day soon.

Finletter emphasized both of the USAF in maintaining status quo of the strategic air arm, but stated that the strategic power was not being expended at the expense of tactical air power.

"I believe," Finletter stated, "that the Strategic Air Command is the great deployment—most confidence in its own attack on us and the first move in the tactical and as defense force of this nation, he said, would not go into battle until we were—hence, the emphasis was on Strategic Air Command, in a very important sense."

Lessons of Korea, plus the making available of more funds for general AF build-up, will permit some emphasis on tactical air power, Finletter said.

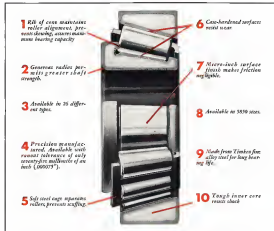
Measure Sets Up Three Air Commands

Three major commands—Air Defense, Strategic Air, Tactical Air—would be established by statute as legislative class for only enactment.

The Secretary of the Air Force is authorized to establish additional commands as he sees fit.

The measure, for the first time since the U. S. Army Signal Corps fought the first plane from the Wright brothers in 1908, pulls out in law USAF's functions as an organization with authority for administrative flexibility.

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PRODUCTION

Auto Firms Get Expansion Money

Food Motor and Kaiser-Frazer sign AF contracts for facilities to produce aircraft engines and planes.

Negotiated contracts totaling over \$50.5 million were awarded by the Air Force on the week ending Jan. 19.

Steadily bid the 1950 work to Ford Motor Co. (\$14.7 million) for facilities to produce engines, and Kaiser-Frazer Co. (\$3.5 million) for plane production facilities. From call for Ford to the Walter P. Reuther Major Aircraft, B-45s, and KF to build Fairchild C-119s and Lockheed P-2V fighter aircraft.

Other large contracts went to Cummins Inc., North American Aviation (\$7.5 million).

C. G. York Inc., Pitts., Mich., spent \$4.1 million for 1951-52 work.

Armstrong Corp., Mich., secured business for 1951-52 work.

At American, Inc., Toledo, N. J., new plant for engine work at \$2.5 million.

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USAF Awards

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Convair's Ft. Worth B-36D Line In Action



A group of giant Convair B-36D and RB-36D maintenance bays and accessories planes get the final touches at Ft. Worth. Try, time to roll out and flight test. Note how the planes are moved along to their 700-ft. wings will fit in the 700-ft. wide assembly bay. The plane in the foreground is the reconnaissance version fitted with a glass cockpit and special color mapping equipment. Workers will jack up the nose prior to moving the plane over the top of the roller pulleys between bays. Clean appearance of assembly shop is noteworthy.

Emphasizing the underlying transport features, the view shows provisions including an auxiliary bomber's nose runway. Both bomb bays are open. Addition of the jet pods containing GE J-47 engines of about 5000 lb. thrust to the B-36's six 1600 hp J-47W Wasp Major has boosted the plane's even-the-largest speed to 416 mph. All earlier B-36s are being converted to Convair for installation of the jet and, along with other modifications, will be similar to present models. Points of interest in this photo include retracted jet air inlet doors and the single wing lower strut. USAF has placed orders for a newer version, the B-36F having 1600 hp Wasp Major.



It's now poised high, as RB-36D is ready to be pulled off the end of the assembly line. Production of such large craft must move very quickly to avoid stock up of obsolete parts and moving them through the various processes. Lacking a runway so that the large plane's 47 ft. high tail can be lowered sufficiently to clear the road system. Although the nose has been closed well over six feet, the thrust line of the jet engines still appears to be quite parallel to the floor level. That view also affords a good look at the open forward bomb bay.

AAL Gaining Financial Strength

Underwriters' analysis of American's growth outlines factors that contributed to present firm position.

Substantial improvement in the financial condition of American Airlines, Inc., is reflected by recent results. The company accomplished several increases in its financial data through the purchase of \$53,900,000 principal amount of its 3 percent debentures, late in 1959. With the \$4,500,000 it had repaid about a year ago, this made a total of \$53 million of debt debentures purchased as of Dec. 31, 1959, serving to reduce the original issue to \$30 million outstanding as of that date. This action anticipates raising fund requirements well into 1958.

The reduction of one-fourth of the company's debt structure is not only a significant reflection in American's financial history but a fitting tribute to private enterprise as supported in the best tradition of the investment banking community.

► **Fixed Asset:** In June, 1946, American raised approximately \$50 million publicly through 540 million in debentures and \$40 million in preferred stock. These issues were underwritten by an investment banking syndicate headed by Kildner, Peabody & Co. The debentures were offered to the public at an initial price of 105, but a delisting market caught this note in a down draft and the marketing was in fact successful to the underwriter.

But American moved in full private water the day the acquisition of the underwriters, who fulfilled their obligation and sought no refuge in a government "buy-out" through a Reconstruction Finance Corp. loan or similar device.

Subsequently, these debentures sold deep at low as 87. With improving credit and the strong retirement program, interest operations for this issue remained flat, at 102.

The fact remains that it was this first underwriting which made it possible for American to obtain the capital funds necessary to embark upon its ambitious expansion program in 1946. This played a key part in enabling the company to maintain a dominant competitive position in the postwar period by being the first to move to complete the consolidation of all its modern process air fleet.

These events now make particularly timely a report currently being issued

by Kildner, Peabody & Co. analyzing the "Strategic Position of the Air Transport Industry with Special Emphasis on American Airlines, Inc." This 22-page study highlights the favorable position of the airline group in our present economy as a leading industry to American's stated role "in being among the greatest potentialities in raising money with the strongest of reasons."

► **Coach:** Peabody is appraising the strong growth characteristics of the air transport industry, this study says that for the first eight months of 1959, air travel was equal to 34 percent of Pullman traffic. The observation is so stated that if present trends persist, air travel will not only equal but may well surpass the level of Pullman traffic this year.

Aggressive merchandising of air travel, as represented by coach services and other promotional fees, is given credit for the substantial sales gains. The report notes "Coach services, obviously, have opened up new traffic water for the airlines, and they will represent an important key to broader future markets."

Self-reliance experience has been obtained "to prepare this practical device for greater utilization when the need for such a traffic stimulant arises."

The Kildner, Peabody study details a number of significant and systematic phases in the development program of American Airlines. For example, the New York Central and the Pennsylvania are reported as the only two railroads now exceeding American in the amount of annual passenger revenues generated.

► **Financially Strong:** American's current financial position is represented to be the strongest it has ever been. As of Sept. 30, 1959, its working capital was reported in excess of \$21,725,000. This compared with only \$5,700,000 at June 30, 1947, "an extraordinarily low level." The improvement of about \$16,025,000 in working capital does not begin to reflect the full extent of American's financial recovery during the period of these years and these months.

In addition to the net working capital gain, the owner's provision for special flight equipment fund, net gain in op-

erating property and equipment, net gain in investments in subsidiaries and the purchase of sinking fund debentures bring the total gross financial recovery to \$44,165,000 for the period. After allowing for the funds provided through the income in current trust portfolio returns, the net financial gain is \$42,710,000.

Further gains are detailed for the 1950 fourth quarter and are tied in with the proceeds received from the sale of American's interest in ADA, together with the funds expended for debenture acquisitions and certain capital expenditures.

► **Competitive Position:** The Kildner, Peabody report analyzes American's competitive position as a result of its modern air transport fleet. Among other things, American's flight equipment was recently estimated to have a replacement cost of some \$113 million. As of Sept. 30, 1959, gross effect to depreciation write-off, this equipment was valued on the books at \$44,045,250, or less than one-third of replacement value.

The modern aircraft fleet of American is represented to give that carrier improved efficiency and reduced operating costs by standardizing on two basic transport types, the DC-6 and Caravelle, utilization of only one type engine, the Pratt & Whitney B-3000, has also been facilitated.

► **Passenger Effect:** The impact on American's 1950 earnings due to sustained passenger volume persisting during the fourth quarter is readily evident through the quarterly analysis for the last two years. Net income before taxes for the 1950 full period is estimated by Kildner, Peabody at \$7 million, or about seven times the comparable results for the 1949 like quarter. This is responsible for the estimated \$28,412,322 net income before taxes for 1950. The longer history on air line earnings is readily apparent when it is realized that net earnings, before taxes, were then doubled in 1950 while revenue passenger output alone averaged 15 percent during the same time.

The report implies that American was subject to an acute profit loss during the second half of 1950. Gross effect to such activities, American's net earnings for 1950 are estimated at all time peak of over \$10 million. After preferred dividend requirements, this is equivalent to about 11 1/2 per cent return as compared with only 79 cents per common share for 1949.

The report concludes with an exposition of American's operations as having the lowest cost in the industry, with a likelihood that its excellent equipment position will help maintain this distinction during 1955.

—Selig Altschul



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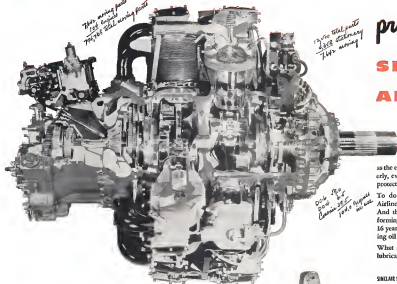
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The continuous acceptance of a new relation between precision and specific use is not apparent in this approach, and the comparison involved is also much simpler and quicker.

The theory is illustrated with reference to both linear and direct problems of compressible flow past typical turbine and compressor blades. The results are compared with experimental data. The results of this approach are clearly seen from these examples. The method is directly applicable to two-dimensional flow and radial turbine machines and may be extended to radial and mixed-flow turbomachinery.

GENERAL AERODYNAMICS

• **Simplified Design Computation of Axial Compressor—**Paul L. Witkowski, Deputy Chief Scientific Advisor, Air Engineering Development Division, Hq. USAF.

Reported as a continuation of studies initiated in 1944 regarding potential improvements of turbine propulsion systems for supersonic flight, as suggested originally by Dr. Theodore von Karman.

Simplified design computation of axial compressors with particular emphasis on the achievement of a high low pressure ratio is treated and is discussed. This feature is important not only as the application of subjects to the present-day engine research, but also as the study of future potential requirements for jet engine engine testing and for application to the design of more compact compressor systems for wind tunnels such as those at the Aeronautical Engineering Development Center.

A comparison is made of some aspects of axial compressor design for accommodating a high rate of mass flow. In particular, the influence of back ratio and axial Mach number on the stage pressure ratio based on assumed limitations of all relative and absolute Mach numbers is given for compressor types designed according to various parameters such as flow velocity, mass, rigid body deformation, and arbitrary decrease of rotor work.

The important relationship between mean-line compressions and mass flow rate is derived for several compressor types to their general qualitative picture as given at the influence of compressive type on the relationship between temperature rise and mass flow rate. This study represents a qualitative method of comparing compressor types at various stages of design, which is usually applied for mass flow.

• **On the Stability of Two-Dimensional Flow of Gas—**I. P. Ts. Barenblatt, Associate Professor for Fluid Dynamics and Applied Mathematics, University of Moscow.

The stability of two-dimensional laminar primary flow both of an incompressible and of a compressible fluid has been investigated by the method of small perturbations. Results for compressible and incompressible fluids are investigated separately.

In case of incompressible fluid, the solution of neutral stable disturbances in an unbounded flow is not obtained. Then the case of neutral flow is considered. Both the symmetrical and the unsymmetrical disturbances are unstable for large Reynolds numbers, but the region of stability of symmetrical disturbances lies much closer to the axis of symmetry. The general shape

of the neutral stable wave is similar against Reynolds number curve of the perturbation from that of the velocity profile of velocity boundary layer flow in Poiseuille flow.

First, the effect of viscosity on the neutral stable disturbance is considered. Then, a direct solution for the primary flow is obtained, where the mean velocity profile is zero and the Reynolds number is large. The primary flow is always unstable. However, for the upper branch of the neutral stable wave number against Reynolds number curve, some neutral waves occur. Reynolds number, and there is a lower branch of this neutral stable wave for the primary flow.

In case of compressible fluid, the aerodynamic behavior of the solutions at infinity is discussed. The neutral stable disturbances in an unbounded flow are not unbounded, and the case of neutral flow is considered. There is some similarity between the solutions at the case of compressible fluid and those of the case of incompressible fluid.

So far as laminar stability is concerned, an important difference exists between the case of supersonic and subsonic disturbances relative to the velocity of the surrounding flow of the jet. The instability of the primary disturbance does not rapidly with the distance from the axis of the jet. The neutral stable disturbance determines the limits of stability of the jet flow. The neutral stable disturbance is actually pressure waves since some length of phase velocity is completely subsonic and which have no significance for stability of the jet flow.

While the Mach number of the maximum velocity at the jet relative to the velocity of surrounding stream is high, the jet type flow tends to be stable with respect to small disturbances.

• **On Aerodynamic Theory of Jet—**A. A. Shvab, Principal Scientific Officer, United Kingdom Ministry of Supply, British Services Museum, Washington D. C.

The theory proposed to explain some of the disturbance factors at jet flow on the basis of the flow being in vacuum. It suggests that disturbance contains a lot of flow rate and regular, unsteady, unsteady, periodic, that based through the field at the axial speed of sound relative to the flow. The broad lines of these periodic disturbances that are characteristic of the flow. The growth of the boundary flow pattern, and shock system, flow can be determined, and the disturbance system that the disturbance becomes at jet flow.

The theory, originated from the analysis of some frequency applied results in which separation and laminar points and shock wave positions appeared to be located on the line.

It has been applied successfully to determine the stability property of the solution from a similar cylinder and the scale of the cylinder wall. Initial experiments on an axial jet flow system have been done that indicate validity of the use of the perturbation theory.

• **A Review of the Shock Wave—**Wend Tausch-Robert Gatzert, Göttingen, GERM.

A Summary in Modern French. This paper summarizes the results of the French efforts during the previous reconstruction in the French-Italian

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type of the former German firm, transferred and tested. A review of the preliminary aerodynamic construction is set forth by the original German design is included. In addition, a detailed analysis of the hydrodynamic system that makes available a stream of air (20400 lb) is explained.

The initial arrangement of the propeller and the policy regarding the water head from the main jetted motor 2800 ft above the level of the water tunnel is also discussed. The various procedures and techniques involved by the French exp were in determining the initial calculations and check-out of the facility use of special interest to compare with current American methods. Aside from the hydrodynamic data and the preliminary information, the paper also contains, for the first time, an overall review of one of the foremost wind tunnel establishments.

SUPERSONIC AERODYNAMICS

► **Damping in Push of Bodies of Revolution at Supersonic Speeds.** G. P. Smith, Project Engineer and Beverly J. Brown, Technical Engineer, Research Department, United Aircraft Corp.

The Kármán-Moore-Tsien solution for the steady flow on bodies of revolution at supersonic speeds are extended to obtain a solution for the damping in pitch of such bodies. Both the direct forces on the body and the associated pressure field about it are defined. Solutions of the bending and drag by step are presented.

This analysis indicates that the body of a representative type missile or aircraft may contribute a damping moment equal to or greater than that of the wings and stabilizing surfaces. The analysis indicates in the damping contribution of the body over that of the wings is due partly to the adverse pressure on one of the body, partly to the increase in fineness ratio, and partly to the large air can present at the tail of most reentry-type bodies.

It is found that blunt bodies with no heat being lost have the most damping. It is further shown that the induced moments about a vertical axis increase the damping contribution of the attached wings and stabilizing surfaces. It is felt that in view of these relative quantities, these damping moments should be included in dynamic analysis and control analysis of automatic control and control.

► **The Lift Distribution on Low Aspect Ratio Wings at Subsonic Speeds.** H. S. Lowman, Assistant Head, Aerodynamic Research Department, Cornell Aeronautical Laboratory, Inc.

A variational procedure is developed for obtaining a set of approximate integral equations from the boundary theory of a lifting surface in a steady incompressible flow. Application of this procedure leads to the well-known integral equations of Prandtl, Weissinger, and Jones and to a new integral equation for the chordwise lift distribution. This integral equation is shown to be a convenient starting point for the iterative solution for the spanwise lift distribution.

A method for solving the integral equation is developed and applied to the camber surface of the lift coefficient center of pressure and damping in roll for rectangular and triangular planforms over the aspect ratio range 5 to 40. The results are found to be in agreement with the available data.

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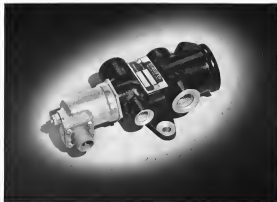
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cockpit windows and inspect to see that all of the low beam lightening hole patterns are exactly in position. If this is not accomplished the windshield fogging air will not be directed to the windows.

• **Wing strengthening.** An EAL engineer, G. S. Dole, devised a method of installing a reinforcement web in the wing of DC-4s which eliminated the necessity of removing the outer wing panels as called for in Douglas Service Bulletin DC-4 No. 44. The object of the bulletin was to increase the structural weight of many series of DC-4s to 50,000 lb. Dole's idea and the use of the 120 members on each of the 17 DC-4s affected.

A visit to the various overhaul shops at the base, under the guidance of Virgil Owens, special assistant, maintenance department, revealed interesting labor-saving devices suggested by strict maintenance personnel. Here are some examples.

• **Flexible line cutters.** The company's mechanics in the hydraulic shop worked up a neat flex line cutter. Controlled by a damped two-way hydraulic actuator, the rig holds the hose tautly at the point to be cut to prevent the stainless steel cutting wheel from sagging on the sides of the hose in the blade cuts through.

The steel wheel is an improvement over the previous one and allows easier, faster disconnection, since it virtually eliminates shock and the dangerous need of burning rubber.

• **Rebalancing brake assemblies.** The brake lever overhangs the system and sometimes need to DC-4 Goodrich multiple disc brakes. Result is a more rigid assembly, less disc warpage and a third inch reduction in brake disc maintenance.

Another simple labor and business-saving device was a homemade laser for brake piston work.

The machine cuts away scoring of the piston, with by removing an average of .0015 in. on one side. This is of course to smooth out the surface and

performs the task to smooth the seal three times before the piston will check and become critical. Prior to the development of the machine, the company said it was only able to smooth the part twice because machining out the piston easily removed more metal than the housing method.

• **Instrument lighting.** T. M. Torgue, crew, foreman, instrument shop, showed this writer an artificial horizon on which he had mounted a plastic cover over the bar. By shining light on the edge, the instrument was perfectly illuminated, and light spillage was reduced to a minimum. Although somewhat similar systems are now in use (see Column, for example), none seems quite as effective as Torgue's.

Kohler Precision engineers say they made up several instruments using the "Temperature Lighting System", but never put it into mass production.

• **Alignment between cowlers.** R. Wood, air technical foreman, explained a new device developed in the instrument shop, called an "Altitude Bellows Fix device".

When the bellows are compressed for inspection stations, they are subjected to pressures of +10 to -40 deg. F. After this treatment, the bellows tend to flatten.

The cowling consists of an aluminum drapings used to contain the pressure of air in the bellows being treated. A micrometer, selected and air valve alternately connect up to 16 bellows to a vacuum chamber, then to atmosphere pressure. The remaining bellows are subjected to a cycle equivalent to going from 100 to 20,000 ft. every 5 sec. for 24 hr.

• **Pressure transmitter tests.** The instrument shop worked up an air and fuel pressure transmitter dead weight tester which has reduced the time required to test these units (frequency) from 1 hr. to 35 min. Also incorporated is a pressure designed to keep the weights from flying off if excessive pressure is applied.

• **Long lasting instruments.** EAL has

installed an Eclipse Proctor model 7006 electric turn and bank indicator as an auxiliary instrument for service trial on a Constellation. "The unit has never been off the ship and is giving perfect service after 9000 consecutive hours of operation," say EAL engineers.

Similarly a Sperry H-4 barometer has operated 2100 hr. with only periodic inspections but no overhaul.

Growing Pneumatics Field Attracts PAC

Pacific Aerospace Corp. is putting increasing emphasis on development and manufacturing of pneumatic aircraft parts. This policy is the result of the widespread use of a pneumatic safety valve first produced by the West Coast company over two years ago, and the increasing interest in this field.

Since early 1949 the firm has produced a total of 26 basic items of pneumatic control equipment for aircraft—placing it squarely in the aircraft components manufacturing field. Until then, PAC's sales policy was directed to complete work and development and manufacture of production and maintenance equipment.

The company says the first years since component production, the safety valve is used on 95 percent of the manufactured planes in this country.

This unit, which finally overcomes an inherent in the valve, originally was designed by Armstrong, Hlg. and Eng. company, Inc., PAC, attracted by the possibilities of a pneumatic valve that would perform the function then being handled by mechanical or electrical gear, automatic pressure relief and check valves, solenoid valves, from AEMCO all rights to the unit plus engineering research of the firm to help produce it. PAC's manufacturing division, under direction of Richard D. Merrill, has been responsible for development and production of the valve and other pneumatic equipment following it.

• **Service Equipment—PAC** also continues development and manufacture of production and maintenance equipment and has manufactured an extensive overhaul service. It has developed over 30 items of test and service equipment for carburetors and fuel and oil fuel pump valves. Besides these, the firm also offers the services of engineering offices, complete with principles, rights and accuracy shops. Experience in this field includes planning and developing using the firm's Bureau Airline in Seattle, GATC in China and the American Airlines Co. in Alaska.

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NEW AVIATION PRODUCTS



CB Extinguisher

A portable fire extinguisher for use on aircraft, designed to make use of liquid chlorobromochloride (CBr) agent is now being adopted by the Air Force, has been developed by Skoplin, Inc.

The unit has a one-gallon capacity and is capable of discharging a high pressure stream of CBr at distances of 30 ft from any combustible target. The company says it has received AF approval recently for use in all types of military craft. AF last year, after extensive research, raised its aircraft fire extinguishing specifications to permit use of CBr agent only. (Aviation Week, July 3, p. 11)

According to Skoplin, the unit is a portable, Type A, B, C fire extinguisher on Class A, B, and C fires. A feature is a patented safety lock that makes it impossible to discharge the extinguisher accidentally, yet can be quickly released to permit spraying of the push-type gun.

The extinguisher is rebalanced by unscrewing the pressure head, filling with one quart of CBr, replacing the head and then adding air from a standard air chuck, to a pressure of 150 psi.

A flexible nylon nozzle, the entire gun is to be discharged from an "up-cable" angle. When the extinguisher is held in the horizontal position for an angle, the operator "flips" to the side of the trigger to pick up fire.

The unit is supported by a special bracket with a toggle clip, permitting it to be mounted by one hand and operated by the other hand. The rubber-reinforced bracket is designed to protect the extinguisher from vibration and conforms to rigid military specifications. The firm says. The A-1 is built to operate through a temperature range of -65 to 160 F. Normal discharge time at 70 F is 27 seconds. Address: 1275 Ashland Drive, Brooklyn, N. Y.

Light Flasher for L-19

A compact "Blind-It" light flasher, model BR-G-1, resembling almost half the size of its predecessor, Model BR-12F, has been adopted as standard equipment on L-19 liaison planes, according to the distributor, Van Dusen Aircraft Supplies.

The device weighs only 11 lb., produces a flashing rate of between 45 and 60 cycles/min. and is fully shielded to prevent radio interference. A failure in the mechanism causes the light to automatically switch to a "steady-on" condition, while the pilot has a choice of either steady or flashing lights through operation of a three-position toggle switch located on the instrument panel.

The BR-G-1 operates on 12 or 24v. d.c. electrical systems, has a capacity of 6 amperes and measures 7x5x2 in. It is manufactured for the distributor by Aeroflex, Inc., Culdwell, N. J. and is available from Van Dusen Supplies, Eastern Division, Inc., Teterboro Air Terminal, Teterboro, N. J.

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Electronic recorder for quick, accurate measuring of temperature of various large electric generators can be used by photo generating much of their own power. It also contains an automatic insertion component at high levels of dependability and safety during capacity operations. Made by General Instruments, division, Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.

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AIR TRANSPORT

Three Month Wait for Priorities

Orders for airline planes will be considered for DO ratings only every quarter except in urgent cases.

Transport plane orders placed since Nov. 1 must wait another month or two for DO priority status, unless a strong case of emergency can be proved.

Orders must wait until the next quarter because the mobilization agencies and procedures outlined in Aviation Week Jan. 13 take time to get going.

Priority program in the three weeks since then:

- Procedures set. It is the Air Coordinating Committee plan agreed upon three weeks ago.
- Spare inventories of transport makers should soon get priority to build up where they are depleted from normal.
- DO's will be issued quarterly probably. Thus, the 30 Convair-Learners ordered by United, the 25 ordered by Transjet, and the two ordered by Avianco last month will not get DO priority until about the first of the next quarter—say next Apr. 1.
- Emergency DO needs for equipment will get special treatment immediately. If the applicant can prove an urgent requirement with national defense aspects.
- Controlled Materials Plan will allocate materials and components to the civil as well as military aircraft programs sometime after July 1 (see page 15).

Present, though subject to revision, will attempt to permit essential airline and private aircraft requirements for the next two to four years.

Production scheduling set at Wright Field, now called Aircraft Production Research Agency, will be coordinating production timing of every part, piece and subassembly on production. Also a transport order line will check up on how AFRA and Aviation Board view the immediate specific program, as that schedule line and the materials supply. If supplies are adequate, and enough military planes are rolling without a hitch, civil orders should await no delay.

Scheduled airlines, both foreign and domestic, should have little trouble in getting their orders filled and delivered on the immediate future. Government spokesmen say the order giving two-engine aircraft orders full DO priority shows the military considers them an essential military move.

Other essential civil requirements, notably crop dusters, should also have

little trouble getting necessary materials. Civil Aeronautics Administration hopes to get 1800 non-military planes a year approved at the executive and private plane quota. CAA would also rate this number in accordance with schedule requirements.

Airline parts requirements, quota is \$10 million a quarter, or \$180 million a year. Domestic airlines already have their share quota well allocated, but European Component Administration and Office of International Trade are not going to issue DOs to foreign airlines for spare parts except for emergency needs until all subinlets are met. They have been through accounts. Thus the foreign lines will get their fair share of the \$180-million quota available each quarter.

32 Convair-Learners—Consolidated Vultures last month took order for 30 Convair-Learners for United, 20 for Transjet and two for Avianco American Oil Co. These orders were submitted immediately by Convair to the proper channels—Executive Civil Aeronautics Board and Equipment Division and OIT for America. Both type orders are already informally approved by the departments. But these orders will probably be held up until a quarterly schedule is set. That is, the Convair-Learners order will be consolidated in a quarterly quarterly application for DO rating, unless Convair can show Apr. 1 would be too late for a DO to assure proper lead time an aviation order.

The preliminary filing for DO by Convair on these orders means, until customer, contract no., date of contract, type aircraft, quantity, total value and delivery dates by months, and value be decided by and given.

But very few airlines or subcontractors are supplying orders without asking for DO ratings. Even with ratings there is often trouble getting deliveries.

The ST. Canaan is slated for delivery in October with a few missing even to early 1951. If that delivery schedule will be delayed by writing to several Apr. 1 for DO priority, then Convair may furnish the delivery agencies with proof-in the form of lead time schedule. This would be in order to deliver. Then Convair may get special treat-

ment on its order by expediting its DO claim. Through the proper channels, element, CAA Office of Aviation Defense Requirements, Air Coordinating Committee, National Production Authority, Materials Board and final check-back through NPA to CAA.

Actual Emergency DO Case—last current example of emergency expediting as an aviation DO priority order is that of Sweeney & Co's order for five B-100B B-100B airplanes to fight the Cuban land army which is expected to plague Egypt's coast early this summer. Sweeney & Co., a du Pont & Nemours affiliate, has a contract with the Egyptian Ministry of Agriculture and the Egyptian Air Force. In May, Avianco turned down the contract but later in Egypt was loaned \$10 million to \$120 million. Allowing a month for despatching the helicopters and another month for Heli's lead time, the order must get its DO rating by March at the latest.

Because the civil aircraft DO rating process and approval are just getting set up, Heli's order will coverable. Being in getting a hurry up DO rating procedure. But last week after getting a plan from the Egyptian government to the U. S. State Department, Heli's application covering the contract—Avianco Supply Corp.—got assurance the five helicopters would get their DO ratings soon.

Trouble-Shooting Shortages—The aircraft section of the Transportation Equipment Division of NPA has the job at this time of trouble shooting materials shortages in aircraft and parts production. About two dozen aircraft contract vendors a week call upon NPA to get their materials.

If the situation cannot be worked out voluntarily, aircraft section chief Al Bert Matthews goes the aluminum division of NPA to issue a schedule allocating scarce aluminum. It is the order to wait for delivery schedule.

Ultimately, the aircraft industry will run along sub-section within the NPA. After Defense Production Administration gets its share and allocation made, it will set up some well known aircraft parts with power in that agency is tied to the industry's needs.

TWA Hiring Drive

TWA has had to go into the labor market in a big way because legions of new hires are needed.

TWA has already opened up new jobs at Los Angeles and most other western hubs. All kinds of ground personnel plus flight attendants, are needed.

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MEMBER ABE AND AEP

* BASED ON 22 INDEPENDENT READER PREFERENCE SURVEYS

* Source: Aviation Week Research

PAA and EAL Sign Interchange Pact

Pan American World Airways, negotiating its stock option and interchange agreement with National Airlines was "repaid" by National, has turned around and signed an interchange with Eastern Air Lines.

This leaves Panagra apparently at odds with its half owner, Panagra Franchises has asked the Civil Aeronautics Board to approve its National interchange but drop the stock option. So Panagra wants interchange with Eastern, and Panagra with National.

But Panagra says the EAL-PAA agreement can be joined by Panagra up until 10 days after CAB approves the EAL-PAA pact. That means Panagra has a lot of time to decide.

The PAA-EAL interchange would allow attention of planes for through service, New York-Los Angeles.

• Routes—The interchange is set for overlapping New York-Miami service on Eastern's routes, but some stops such as Washington, Philadelphia and Boston may be added if the parties agree. On Panagra's routes, plans are:

• One overlapping daily Intercontinental, California and intermediate or some remote point-to-point flights later if agreed.

• Panagra-Pan American "El Intercontinental" flight to Canal Zone and points south daily.

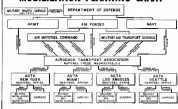
• Panagra-Pan American Intercontinental flights continue twice weekly.

• Panama flight will be at least one overlapping daily.

• Line Costs—Here are important considerations: direct flight costs will be based on the weighted average cost per total aircraft mile represented by domestic transoceanic operations for each type plane. The same principle applies to direct maintenance of flight equipment, except that in computing the average, costs for one of a large part of their work to others shall be included. Flight equipment depreciation expense is based on weighted average cost per total aircraft mile of domestic carriers for the same planes. But if reported costs are based on a life different from seven years for Continental and four years for DC-4s, costs shall be adjusted to this basis.

Ground expenses are at one cent per revenue mile. Investment in equipment will be paid by the lease at the rate of seven percent after annual income tax and surplus. Because of different seating capacity Pan American will reduce its aircraft per revenue mile on Coast-to-coast flights comparable to Panagra by 25 percent of the difference in seat mile cost computed on the basis of seats to PAA's planes and when computed on the basis of the lowest number of seats to Eastern planes.

AIRCOACH TRANSPORT ASSOCIATION MOBILIZATION PLANNING CHART



FOUR REGIONAL OFFICES proposed by ACTA for its needed mobilization plan

ACTA Awaits CAB Accreditation

The Air Coach Transport Assn. hopes within a week to be accredited formally by the Civil Aeronautics Board as representative of its member airline members. This will permit the Military Traffic Service of the Defense Department to consider ACTA as representative of the members at military bases along with the established airlines, which are represented by Air Transport Assn., by getting charter contracts and foreign licenses.

ACTA has fought an uphill struggle to bring order and enforce practices to the domestic aviation for soldiers. It has spent close to \$10,000 pooled by member carriers and agencies since its organization last June. It has had considerable success in getting up and adhering to members. Civilian duty discipline is good in Miami and San Francisco, but at the other two named bases, New York and Los Angeles, not that persons are still difficult to control.

Recently, members have been getting harder to keep in line, as they see ACTA has been unable to gain a change in CAB membership policy. They see that they will be put out of business by CAB if they cannot find authority as defined by CAB, which leaves "large carrier surplus" to those flights a month between any two large cities. Hence, many members are now going out while they await the death sentence, which will probably be imposed when they come up before CAB for individual complaints.

But a mobilization plan like ACTA's (Aviation Week Jan. 28) may yet save

the industry by giving it military official and foreign travel to and from military installations.

Two groups Defense may bring since such plan to keep the members alive:

• They are a self-supporting reserve group that has no formal obligations toward the civil economy. Hence can be called on by the military without direct expenditures.

• If they go out of business, they will still a large share of their planes in both America and abroad, reducing the U. S. air transport plane reserve potential.

U. S. Airline Pilots to Fly Jetliner Trials

A V. Nor Canada Ltd. is letting U. S. airline pilots fly its jetliner to demonstrate them with jet transport flight.

On latest jetliner test survey runs in this country, Airco will fly along a pilot of the airline flying the jetliner route.

This not only is a good stunt to promote manufacturer relations, but also places the opportunity to judge the jetliner's flying qualities with airline personnel who can appreciate these characteristics.

• **News-Newsline**—The plan of the news has been announced. On the March-New York trip, Jan. 25, National Airlines' chief pilot, Joe Bailey, not at the controls all the way.

The jetliner kicked off the trip in full time from the airport, the which left the ground at Miami to an



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mail over the tower at Miami at 20,000 ft, dropped first was 2 ft 21 in. After descending into the traffic pattern, the plane headed 13 mi. later at La Guardia.

■ **Flight Data-Cruise** was at 35,000 ft at a true airspeed of 420-443 mph. Overall average speed, including climb as well as cruise, was 380 mph. Overall average ground speed, including climb and cruise, was 416 mph, (wind-up tailwind was 75 mph).

Fuel consumed on the run was 2,000 gal.

On the previous run from Toronto, Canada, to Tampa, Fla., Jan. 22, test was 2 hr 56 min for the 1,730 mi. distance, which left to arrive over tower Fuel consumed was 2,400 gal.

On the trip from Tampa to Miami, where the northbound flight began, E. J. Kershner, National's vice-president in charge of operations, sat on board.

The jetliner now is in the hangar at Army's Midway plant for the 284th inspection.

CAB Okays EAL for N.Y.-Puerto Rico Run

The Civil Aeronautics Board in its first important decision this year granted New York-Puerto Rico service to both

Kuonin Air Lines for private and cargo and Riddle Aviation Co. for cargo only.

More CAB decisions are now, now that Board Chairman Dean Ruskell is settled in his new job, the CAB now is expected to be busy, and no information plan is being shaped. Plenty of action is that if the new five-member Board backs the program and policy recommendations outlined by Ruskell last month (Aviation Week Jan. 22).

CAB granted additional service between Puerto Rico and New York to Eastern and Riddle for a "stopover" period of five years. President Truman approved. Ruskell given by the Board for an decision to add these services to those already supplied by Pan American World Airways. "The outstanding need," it for the movement between New York and Puerto Rico of large numbers of people for medical services. (And the demand need to be met in that for law-enforcement.)

But although the Board said it was not entering would give most attention to out-of-state transport, Eastern may also compete with Pan American for regular service.

Board member Harold Jones dissented from the majority decision. He said he need for additional air service between San Juan and New York.

That based in granting Eastern authority to carry persons, property and mail, New York-San Juan, ordered an overflight. To determine whether the service presently operated by Eastern, Miami-San Juan, should be suspended.

Some reported cases that should break open routes to San Juan. Service to the West, Texas Airways certificate recent, New York-San Juan service, trans-Atlantic flight once, first domestic air back end pay or date of Western Airlines and Indian Airlines first and rates for American Airlines, Colonial Airlines, Eastern Airlines, National Airlines, Northeast Airlines, Northwest Airlines, Trans World Airlines, and United Air Lines.

Change Expected in Rail Travel Clause

Airlines may at last get a fair share of business from military travel orders to officers and men after June 30 of the year. Reason is that the new military travel regulations and standards between the Military Traffic Service and the air, rail, and bus industries will be recorded to eliminate the "red pencil travel clause" for fiscal 1953-2.

The rail preference clause instructs military agencies to dispatch men by rail, unless other means are cheaper or otherwise required. That clause has produced the decisions of many dispatching agencies—since it tends to

hand the demand to rail in such cases, unless there are extraordinary circumstances.

The Military Traffic Service attributes military traffic management policies for the Department of Defense. Director E. G. Fawcett and Deputy Director Col. A. G. Wiley say there will be a narrowing of the preference clause, as well as other changes, this year.

Changes are that an earlier sign of speed-consciousness and flexibility in military operations. It has been stated that at any given time, one out-of-three of the U. S. military force is in transit, and therefore totally ineffective. Two out-of-three of U. S. fighting strength is at all times under main post and present systems of transfer for personnel. A military toward more use of air transport is military force will under some military force effective at any given time.

Getting out the rail preference clause in military transfer policy means rail probably be displaced with whatever speed their commandment feel necessary to the best defense.

The policy change may also indicate belief by the military that commercial air transport should get more business with which to grow, and thereby produce more planes to serve in a defense source.

Furlough Air Travel Tax Law Under Fire

Military Traffic Service and Air Transport Authority may soon get the 15 percent transportation tax taken off airline tickets for industrial service men. Because of a trouble in Public Law 847 passed at the request of the House of Congress, service men on leave must pay the full tax for air travel, but so far not for bus travel.

The law says a service man's transportation ticket is exempt only if the cost of that ticket comes to 1,025 cents or less. Plainly, no airline can possibly operate at such low cost.

The law went through Congress quickly, it is at the same session that ended in World War II. But then the airlines were so short of planes they carried only priority travelers, as a rule. They could not provide standing views on their planes as airroads and buses did. But now, with a much larger air transport fleet, and load factors running only 50 to 60 percent, the military and airlines would profit alike if furloughed service men were given the opportunity to travel by air or surface, as they required.

Under the present strap, whether the service man was the government or the defense effort goes from the spend money during wartime alone to charge a 15 percent transportation tax.



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LETTERS

Insurance Confusion

I was interested in the letter you published concerning Civil Insurance. While I think the third time you have published a "new" insurance program offered by a relatively new, small, and unestablished firm, yet I cannot recall that you have ever highlighted or publicized the work of the "old timer" in the established aviation insurance markets.

A quick check of my policy listed by any of the established markets today compared with the policies in force just prior to the war will demonstrate you of the changes, all due to the fact, that even when policies or the coverage provided, I know now that you must be aware of the safety work required for insurance markets that directly and indirectly have contributed as much to the development of aviation.

But by presenting only the story of the small upstart group who are far from the cream of the aviation insurance market you are making the job of the established markets more and more difficult.

Although I am sure you do not mean to do so, I think you are giving the impression that here at last is a market that will make aviation safe at a "reasonable" rate. I can only say that I can believe that if a more rational basis for giving such an impression, be in your position you would and I am sure you do realize that aviation safety, as you see it, requires that which makes you go to, and live in, conformity with the actual loss experience.

In present policy, for example, we have that which specifies that the policyholder will be involved in an accident, and the amount of coverage will be approximately 50 percent of the value of the aircraft. As long as you continue to have that sort of loss experience it is pretty hard to alter materially the present rating structure.

How you can tell this sort of the aviation war have published an excellent article in only the latter class of aviation news sheet. They aren't interested in providing coverage for the new concept of the better airplane, or the scheduled and unscheduled loss experience, and all those other standards which naturally are extra business or require past experience but which, nevertheless, must have insurance protection. Don't the established companies, and the new who previously have been successful in some field be taking the lead with the good doing the best of this sort?

Another very interesting point, is that lack of the particular machine, associated in Aviation. Where has any or less limited their activities in new particular group of pilots. Yet it is not new to them this rating of flying experience with those who have been using airplane insurance for any period of time I think you will find that the vast majority agree with the fact that the most favorable is a pilot's risk, or is in fact, or Mohammedan, doesn't necessarily make him a better pilot as the group is with risk. Certainly, but I believe anyone making a lower rate, and the individual one put it by joining a certain group

I personally don't blame him in the slightest, but in the case of the firm cited, but I cannot help but wonder who underwriting does make any what better than market and therefore related to a lower rate.

I was especially amazed at Mr. Crawford's description of the new Hull Coverage that provide with the strong implication that it was something new. It isn't. He doesn't credit, however, for describing the old fashioned Participating Policy in a most attractive way. It is the same old Hull Coverage with just a few points of all but have been somewhat added a bit more attractive than before the insured that he has to pay 31 percent of all his losses. The cost of a certain of a deductible policy was a participating policy, however, is desirable.

Mr. Crawford then goes on to say that the new policy is in operation in a best basis for flights over one year, but he doesn't explain that that means his premium income is probably less than 50 percent more. Before they get too optimistic as to what the future holds and how that loss rate is, however, they will certainly need more than that which based experience to have a decision that will affect the actual policy.

I am not protesting new marketing plans, new programs, but I am protesting that if you are going to give them publicity that it be done in an unbiased basis and instead of doing it for the few markets who are not the equal players to the old established market who have actively done a tremendous job over the years.

Why not just a regular review have been published. Certainly, aviation insurance is one of the major items of expense in any form of aviation operation, and probably that is more understandable about it than any other phase of aviation.

C. A. WEAVER, Mission Aviation Dept.
Chief, Pilots & Co.
600 Browne St.
San Francisco

(Mr. Weaver refers to a letter published in Aviation News Oct. 18, 1940. Don't Mr. Weaver consider that it probably "more understanding" about aviation insurance than the other phase of aviation? We don't disagree, people try to do something about it. Look in or in the public opportunity for more positive action.)

My Weaver says the small upstart club member plans "to be the cream of the aviation insurance market." And he doesn't blame any pilot for making lower rates if they can get them. The point is that my ask who he should help pay the benefit for making other loss crop district or better experience, is obvious that Mr. Weaver says "admittedly an extra business or expense past capacity but which, nevertheless, must have insurance protection." The answer, I think, might ask why shouldn't we pay for it in our category of risk and let the crop district do the same

It would appear on the basis that such club insurance plans are being to do just that. If any large group happened to failed, making their policy holders losses, we would like to hear about them, to present the other side of the membership too.

Mr. Weaver finds something in the club insurance policy developments of its hull coverage which implies that it is something new. Mr. Weaver says it isn't but says the new member should be describing the old fashioned participating policy in a most attractive way. Maybe that is another point. In addition, losses to be turned by the old losses. You can't do the best possible selling job of insurance or working over by convincing your potential members. You have to use people are not only people of our platform, and communication. Tell it as an effective way. Insurance policy has become the new voice who thought they understood the subject couldn't write in the market could understand the entry. We are sure power to group members plan if they work and get it. While we're on the subject, we must congratulate Associated Aviation Underwriters on their outstanding accomplishment in supplying advice passage trip insurance to new state wide and your own policy is a new rating machine in a group of markets at about any other insured in the country.—R.H.W.)

The Ground Link

Year Jan. 4, 1941 led in reviewing work on the "grounding" system designed to assist the pilot's reaction in high altitude ejection and bail-out.

The airborne equipment was designed, however, I think that there will be a certain amount of ground work on the ground. I think that there will be a certain amount of ground work on the ground. I think that there will be a certain amount of ground work on the ground.

The AN/AGL-10, a high-altitude ground receiving equipment, besides being reliable, dependable and readily capable of use and accuracy following variable altitude systems in the air, can be used on the ground for ground-to-air communication.

My Weaver says "admittedly an extra business or expense past capacity but which, nevertheless, must have insurance protection." The answer, I think, might ask why shouldn't we pay for it in our category of risk and let the crop district do the same

M. V. KROGER, Jr., Manager
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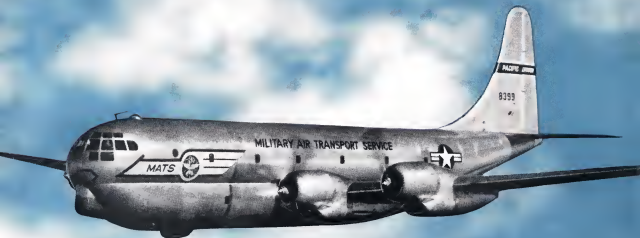
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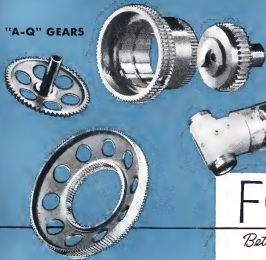
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